***STLC (Software Testing Life Cycle):***

The Software Testing Life Cycle (STLC) is a systematic approach to testing a software application to ensure that it meets the requirements and is free of defects. It is a process that follows a series of steps or phases, and each phase has specific objectives and deliverables. The STLC is used to ensure that the software is of high quality, reliable, and meets the needs of the end-users.

The main goal of the STLC is to identify and document any defects or issues in the software application as early as possible in the development process. This allows for issues to be addressed and resolved before the software is released to the public.

The stages of the STLC include Test Planning, Test Analysis, Test Design, Test Environment Setup, Test Execution, Test Closure, and Defect Retesting. Each of these stages includes specific activities and deliverables that help to ensure that the software is thoroughly tested and meets the requirements of the end users.

Overall, the STLC is an important process that helps to ensure the quality of software applications and provides a systematic approach to testing. It allows organizations to release high-quality software that meets the needs of their customers, ultimately leading to customer satisfaction and business success.

***Characteristics of STLC:***

* STLC is a fundamental part of the Software Development Life Cycle (SDLC) but STLC consists of only the testing phases.
* STLC starts as soon as requirements are defined or software requirement document is shared by stakeholders.
* STLC yields a step-by-step process to ensure quality software.

In the initial stages of STLC, while the software product or the application is being developed, the testing team analyzes and defines the scope of testing, entry and exit criteria, and also test cases. It helps to reduce the test cycle time and also enhances product quality. As soon as the development phase is over, the testing team is ready with test cases and starts the execution. This helps in finding bugs in the early phase.

***Phases of STLC:***

**1. Requirement Analysis:** Requirement Analysis is the first step of the Software Testing Life Cycle (STLC). In this phase quality assurance team understands the requirements like what is to be tested. If anything is missing or not understandable then the quality assurance team meets with the stakeholders to better understand the detailed knowledge of requirements.

**2. Test Planning:** Test Planning is the most efficient phase of the software testing life cycle where all testing plans are defined. In this phase manager of the testing, team calculates the estimated effort and cost for the testing work. This phase gets started once the requirement-gathering phase is completed.

**3. Test Case Development:** The test case development phase gets started once the test planning phase is completed. In this phase testing team notes down the detailed test cases. The testing team also prepares the required test data for the testing. When the test cases are prepared then they are reviewed by the quality assurance team.

**4. Test Environment Setup:** Test environment setup is a vital part of the STLC. Basically, the test environment decides the conditions on which software is tested. This is independent activity and can be started along with test case development. In this process, the testing team is not involved. either the developer or the customer creates the testing environment.

**5. Test Execution:** After the test case development and test environment setup test execution phase gets started. In this phase testing team starts executing test cases based on prepared test cases in the earlier step.

**6. Test Closure:** Test closure is the final stage of the Software Testing Life Cycle (STLC) where all testing-related activities are completed and documented. The main objective of the test closure stage is to ensure that all testing-related activities have been completed and that the software is ready for release.

At the end of the test closure stage, the testing team should have a clear understanding of the software’s quality and reliability, and any defects or issues that were identified during testing should have been resolved. The test closure stage also includes documenting the testing process and any lessons learned so that they can be used to improve future testing processes

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**Test summary report:** A report is created that summarizes the overall testing process, including the number of test cases executed, the number of defects found, and the overall pass/fail rate.

Defect tracking: All defects that were identified during testing are tracked and managed until they are resolved.

**Test environment clean-up:** The test environment is cleaned up, and all test data and test artifacts are archived.

**Test closure report:** A report is created that documents all the testing-related activities that took place, including the testing objectives, scope, schedule, and resources used.

**Knowledge transfer:** Knowledge about the software and testing process is shared with the rest of the team and any stakeholders who may need to maintain or support the software in the future.

**Feedback and improvements:** Feedback from the testing process is collected and used to improve future testing processes

